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Phenomenological analysis of multi-pseudoscalar mediated dark matter models

Non-minimal simplified extensions of the Standard Model have gained considerable currency in the context of dark matter searches at the LHC, since they predict
enhanced mono-Higgs and mono-W/Z signatures over large parts of the parameter space.
However, these non-minimal models obviously lack the simplicity and directness of the
original simplified models, and are more heavily dependent on the model assumptions. We propose to classify these models generically on the basis of additional mediator(s) and dark matter particles. As an example, we take up a scenario involving multiple pseudoscalar mediators, and a single Dirac dark matter particle, the latter being a popular introduction to ensure ultraviolet completion of theories with multiple pseudoscalar fields. In the chosen scenario, we discuss the viable channels and signatures of relevance at the future runs of the LHC. These are then compared with the minimal simplified scenarios and distinguishing features are pinpointed.

Collaboration / Activity

Phenomenology work

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